

CLAIMS

What is claimed is:

1. An implantable electronic module, comprising:
 - an hermetically-sealed housing having a length no greater than about 27 mm and cross-sectional dimensions no greater than about 3.3 mm;
 - an electronic subassembly housed within said hermetically-sealed housing;
 - self-contained power source means contained within said hermetically-sealed housing and operatively connected to said electronic subassembly for providing operating power to said electronic subassembly;
 - a first electrode external to said hermetically-sealed housing and electrically coupled to said electronic subassembly;
 - a second electrode external to said hermetically-sealed housing and electrically coupled to said electronic subassembly;
 - an antenna coil within said hermetically-sealed housing; and
 - telemetry means, coupled to said antenna coil, for allowing data-containing signals to be received from and sent to an external device.
2. The electronic module of Claim 1 wherein the electronic subassembly includes a ferrite core around which the antenna coil is wrapped.
3. The electronic module of Claim 2 wherein the ferrite core includes a first half and a second half.

4. The electronic module of Claim 3 wherein the self-contained power source is selected from the group comprising: a primary battery, a rechargeable battery, a super capacitor, a nuclear battery, a mechanical resonator, an infrared collector, a thermally-powered energy source, a flexural powered energy source, a bioenergy power source, a fuel cell, a bioelectrical cell, and an osmotic pressure pump.

5. The electronic module of Claim 4 wherein the hermetically-sealed housing comprises a tubular-shaped housing having a length no greater than about 27 mm and a diameter no greater than about 3.3 mm.

6. The electronic module of Claim 4 wherein the electronic subassembly includes means for generating stimulation pulses that are applied through the first and second electrodes.

7. The electronic module of Claim 6 wherein at least one of the first and second electrodes is carried on an external surface of said hermetically-sealed case.

8. The electronic module of Claim 1 wherein the self-contained power source means comprises a primary battery.

9. The electronic module of Claim 5 wherein the self-contained power source means further includes a super capacitor.

10. The electronic module of Claim 1 wherein the self-contained power source means comprises a rechargeable battery.

11. The electronic module of Claim 7 wherein the self-contained power source means further includes a super capacitor.

12. An implantable electronic module, comprising:

- an hermetically-sealed housing having a length no greater than about 27 mm and cross-sectional dimensions no greater than about 3.3 mm;
- an electronic subassembly housed within said hermetically-sealed housing;
- self-contained power source means contained within said hermetically-sealed housing and operatively connected to said electronic subassembly for providing operating power to said electronic subassembly;
- a first electrode external to said hermetically-sealed housing and electrically coupled to said electronic subassembly;
- a second electrode external to said hermetically-sealed housing and electrically coupled to said electronic subassembly; and
- telemetry means for allowing data-containing signals to be received from and sent to an external device.

13. The electronic module of Claim 12 wherein the self-contained power source is selected from the group comprising: a primary battery, a rechargeable battery, a super capacitor, a nuclear battery, a mechanical resonator, an infrared collector, a thermally-powered energy source, a flexural powered energy source, a bioenergy power source, a fuel cell, a bioelectrical cell, and an osmotic pressure pump.

14. The electronic module of Claim 12 wherein the self-contained power source means comprises a primary battery.

15. The electronic module of Claim 14 wherein the self-contained power source means further includes a super capacitor.

16. The electronic module of Claim 12 wherein the self-contained power source means comprises a rechargeable battery.

17. The electronic module of Claim 16 wherein the self-contained power source means further includes a super capacitor.

18. An implantable neural stimulator module, comprising:

- an hermetically-sealed housing having a length no greater than about 30 mm and cross-sectional dimensions no greater than about 3.7 mm;
- an electronic subassembly housed within said hermetically-sealed housing;
- self-contained power source means contained within said hermetically-sealed housing and operatively connected to said electronic subassembly for providing operating power to said electronic subassembly;
- a first electrode external to said hermetically-sealed housing and electrically coupled to said electronic subassembly;
- a second electrode external to said hermetically-sealed housing and electrically coupled to said electronic subassembly; and
- telemetry means for allowing data-containing signals to be received from and sent to an external device.

19. The implantable neural stimulator module of Claim 18 wherein the self-contained power source means comprises a primary battery.

20. The implantable neural stimulator module of Claim 18 wherein the self-contained power source means comprises a rechargeable battery.